

Memorandum

To: DC Demonstration Participant Group
From: My Ton, Ecos Consulting; Brian Fortenbery, EPRI Solutions
Re: Notes from Friday, 18 November 2005 Conference Call
Cc: Bill Tschudi
Date: Monday, November 28, 2005

This was a follow up call to discuss next steps for the DC Architecture Demonstration. Intel has recently indicated interest in such a demonstration, and presented their concepts to the group. Participants included:

Bill Tschudi – LBNL
My Ton – Ecos Consulting
Ben Hartman, Paul Savage – Nextek
Christian Belady – HP
Gary Mulcahy – TDI
Janos Radja – SATCON Power Systems
Larry Seibold – Rackable Systems
Johnny Gonzalez – Pentadyne
Annabelle Pratt, Pavan Kumar, Intel
Mike Bushue, Dennis Symanski, Sun Microsystems
Mark Baldwin, David Geary, Baldwin Tech
Mike Mossman, CCG Facilities

IBM and Dell were invited.

Major discussion points covered:

Approaches: There was agreement that different approaches need to be documented. The two approaches under consideration are:

1. DC conversion/distribution at the rack level
2. DC conversion/distribution at the building/data center level

Baldwin Technologies noted that Visa may be interested in a distribution system comparison.

Efficiency: There seemed to be agreement that the highest conversion efficiency may be at the building/data center level, and an efficiency demonstration may want to take this approach. However, this approach will require an infrastructure change for data centers and others, as it currently is not in use, except at telcos. Option 1 – DC conversion/distribution at the rack level requires no data center infrastructure changes, and is backward compatible with current set up.

DC distribution issues:

- HP noted that 48 VDC is needed at the rack level.
- Sun indicated that the safety issue should be recognized with high-voltage DC. There is also a need for agreement on how to get DC into the box – allowing box manufacturers this control allows them to control this issue and the safety issue.
- Nextek discussed the fact that telcos have a specification for their 48 VDC delivery, and telcos also use voltages below 40 VDC.
- IBM has a set up that delivers 380 VDC to the front (back?) end of their high-end servers.

Other Considerations:

For demonstration purposes, it is possible to consider the rack as a black box?

Consider the power interface at the rack level and explore efficiency/delivery options

Future racks will exceed 10+ KW, up to 20 kW racks should be considered

Racks with higher loads (20 kW or above) will require new infrastructure/architecture

Next Steps:

- My Ton to circulate notes, Baldwin's 24/7 presentation
- Circulate matrix of participants and available equipment
- Regroup/follow up first/second week of December based on availability